

**CLAIMS**

- 5                   1. A method to make a metal fiber, comprising the steps of
- Providing a foil or plate being composed of metal or metal alloy M1;
  - Applying at a first side of said foil or plate a layer of a second metal or metal alloy M2;
  - Coiling said foil or plate comprising M1 and M2 on a shaft;
  - 10               — Rotating said shaft with coiled foil or plate and cutting the end surface of said coiled foil or plate using a cutting tool.
- 15               2. A method to make a metal fiber as in claim 1, comprising an additional step of applying a layer of a third metal or metal alloy M3.
3. A method to make a metal fiber as in claim 2, wherein additional layers of metal or metal alloys are provided.
- 20               4. A method to make a metal fiber as in one of claims 2 to 3, wherein said layer of a third metal or metal alloy M3 is applied at the second side of said foil or plate.
- 25               5. A method to make a metal fiber as in one of claims 2 to 4, wherein said M3 being selected out of the group consisting of Cu, Ni, Pt, Pd, Ag, Au, Rh, V, W, Fe, Mo, Ir, Al, Ti, Ce or an alloy comprising at least one element out of said group.
- 30               6. A method to make a metal fiber as in one of claims 2 to 4, wherein said M3 is present as a metal oxide.
7. A method to make a metal fiber as in one of claims 2 to 6, wherein M3 is applied to said foil or plate by sputtering, spraying thermal spraying, electrolytic coating or dip coating.

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8. A method to make a metal fiber as in one of claims 2 to 7, wherein M2 is equal to M3.
- 5 9. A method to make a metal fiber as in one of claims 1 to 8, wherein M2 is applied to said foil or plate by sputtering, spraying thermal spraying, electrolytic coating or dip coating.
- 10 10. A method to make a metal fiber as in one of claims 1 to 9, wherein said metal fiber has a substantially polygon cross section.
11. A method to make a metal fiber as in one of claims 1 to 9, wherein said metal fiber has a substantially rectangular cross section.
- 15 12. A method to make a metal fiber as in claim 11, wherein said metal fiber has a substantially square cross section.
13. A method to make a metal fiber as in one of claims 1 to 12, wherein said metal fiber has an equivalent diameter of less than 150  $\mu\text{m}$ .
- 20 14. A method to make a metal fiber as in one of claims 1 to 13, wherein M1 provides at least 90% of the surface of a cross section of said metal fiber.
- 25 15. A method to make a metal fiber as in one of claims 1 to 14, wherein M1 is stainless steel.
- 30 16. A method to make a metal fiber as in one of claims 1 to 15, wherein said M2 is selected out of the group consisting of Cu, Ni, Pt, Pd, Ag, Au, Rh, V, W, Fe, Mo, Ir, Al, Ti, Ce or an alloy comprising at least one element out of said group.
17. A method to make a metal fiber as in one of claims 1 to 16, wherein said M2 is present as a metal oxide.

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- 5 18. A metal fiber having a cross section, said cross section having a perimeter, characterized in that said cross section comprises at least a first zone and a second zone, each of said zones providing a part of said perimeter, said first zone being composed of a first metal or metal alloy M1, said second zone being composed of a second metal or metal alloy M2, said M1 being different from said M2, said fiber equivalent diameter is equal or less than 150 $\mu$ m.
- 10 19. A metal fiber as in claim 18, wherein said cross section comprises a third zone providing a part of said perimeter, said third zone being provided out of a metal M3.
- 15 20. A metal fiber as in any one of claims 18 to 19, wherein said cross section comprises additional zones providing a part of said perimeter.
- 20 21. A metal fiber as in any one of claims 18 to 20, wherein said second zone and said third zone provide parts of said perimeter, opposite to each other.
- 25 22. A metal fiber as in any one of claims 18 to 21, wherein said M3 is selected out of the group consisting of Cu, Ni, Pt, Pd, Ag, Au, Rh, V, W, Fe, Mo, Ir, Al, Ti, Ce or an alloy comprising at least one element out of said group.
- 30 23. A metal fiber as in any one of claims 18 to 21, wherein said M3 is present as a metal oxide.
24. A metal fiber as in one of claims 18 to 23, wherein said M2 is equal to M3.

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25. A metal fiber as in any one of claims 18 to 24, wherein said cross section being substantially polygon.
- 5 26. A metal fiber as in any one of claims 18 to 25, wherein said cross section being substantially rectangular.
27. A metal fiber as in claim 26, wherein said cross section being substantially square.
- 10 28. A metal fiber as in one of claims 18 to 27, wherein M1 provides at least 90% of the surface of said cross section.
29. A metal fiber as in one of claims 18 to 28, wherein said M1 is stainless steel.
- 15 30. A metal fiber as in one of claims 18 to 29, wherein said M2 is selected out of the group consisting of Cu, Ni, Pt, Pd, Ag, Au, Rh, V, W, Fe, Mo, Ir, Al, Ti, Ce or an alloy comprising at least one element out of said group.
- 20 31. A metal fiber as in one of claims 18 to 29, wherein M2 is present as a metal oxide.